

APPENDIX P:

Soil Management Plan / Air Monitoring Procedures / Decontamination Procedures / PPE Procedures

APPENDIX P

GEC'S SOIL MANAGEMENT PLAN FOR REMEDIAL RELEASE ABATEMENT MEASURES PLAN (RAM) ACTIVITIES

**169.2 BRIDGE ST., LOWELL, MA
RTNs 3-33474, 3-33101, and 3-33853**

Introduction

A 120-day reportable condition was discovered at 169.2 Bridge Street, (Subject Property, which is a historic mill complex), due to the presence of polychlorinated biphenyls (PCBs), metals and insecticides above Reportable Concentrations (RCS-1) in shallow soils in the courtyard located between the "Boiler House" and the adjacent site on which renovation is currently occurring, i.e., the "Picker Building". This soil contamination extends across the entire courtyard, and gradually diminishes with depth to approximately 11 feet below grade. Polycyclic aromatic hydrocarbons (PAHs), mostly associated with coal ash, are also present in these soils. Asbestos, comprised mostly of chrysotile but also including some amosite, is present in the shallow soils of the courtyard. No asbestos contamination has been detected in subsurface soil samples collected at the east end of the courtyard. Petroleum contamination, comprised of no. 6 fuel oil, is present at the east end of the courtyard near two abandoned fuel oil bunkers. This petroleum contamination extends from the west side of the fuel oil bunkers east to the retaining wall bordering the Concord River. It extends north to the Boiler House and south to the Picker Building. Near the fuel oil bunkers the petroleum contamination is approximately 2-5 feet below current grade and extends to a smear zone straddling the water table, approximately 16 to 17 feet below current grade. The no. 6 fuel oil is likely present as free phase at or near the smear zone and perhaps at the bottom of and beneath the fuel oil bunker(s).

This Soil Management Plan (SMP) addresses is prepared considering the remaining planned IRA activities where soils may be encountered: (1) preparation of existing structures (utility vault, dry wells and coal chute) to prepare final soil repositories; (2) creation of a final soil repository at the location of the fuel oil bunker(s), following excavation of petroleum-contaminated soils; (3) excavation of asbestos/PCB-contaminated soils and placement of soils in on-Site soil repositories; (4) excavation of petroleum-contaminated soils for off-Site disposal; (5) coating of the courtyard-side of the retaining wall with a waterproofing product or installation of a water-tight wall at the base of the retaining wall; (6) installation of oil recovery wells, either in excavation hole or later by drill rigs; (7) (optional) installation of an interceptor trench and catch basin to relieve hydrostatic pressure on the courtyard side of the retaining wall; (8) installation of clean utility corridors; and (9) installation of a three-foot protective cover over the soils, comprised of a geotextile fabric cover over the affected soils followed by three feet of clean fill and landscaping. If excavation can advance low enough to reach the petroleum smear zone, groundwater is likely to be encountered; therefore, dewatering of the excavation hole(s) at the east end of the courtyard is expected.

Management of Soils during Removal Activities

Activities that involve the disturbance or excavation of Site soils shall be conducted in a manner that is consistent with this SMP and Axiom's Non-Traditional Asbestos Abatement Work Plan (NT), dated October 4, 2016 (where applicable). If there are inconsistencies between this SMP and Axiom's NT (or its successor), the requirements in Axiom's NT will prevail, because this SMP does not address all issues associated with asbestos-contaminated soils and other materials. Axiom's NT, dated October 4, 2016, is provided as Appendix F-1, to this SMP. Axiom's decontamination requirements are provide as Appendix F-2, and details regarding Axiom's Equipment Wash Station are provided in Appendix F-3. Asbestos ambient air monitoring is required in Axiom's NT. The locations of the four asbestos ambient air monitoring stations, 3-stage personnel decontamination facility and the equipment washing station are depicted in Figure 10A.

This SMP describes appropriate soil excavation, handling, storage, on-Site reuse or off-site disposition of soils disturbed during IRA activities. It also contains provisions for actions to be taken when contaminated soils are encountered. This SMP also includes a description of appropriate engineering controls and screening procedures necessary to mitigate potential exposure of workers and other individuals in the project area to fugitive dust, particulates, vapor emissions, and exposure to contaminated soil via inhalation or ingestion, as well as procedures for dewatering of water in excavation holes.

The entire scope of work as defined below shall be managed, monitored and supervised by a Licensed Site Professional (LSP) or his/her designee. Refer to part E. GEC Contacts for the name and contact information of the LSP and his/her designee overseeing work within the disposal Site. The contacts for the Massachusetts-licensed contractor, supervisor and project manager and the construction manager/project manager/site superintended are provided in Section B of Axiom's NT (Appendix F-1).

A.	Requirements for Soil Disturbance Activities, including Excavation Activities
(1)	Erosion controls must be installed and maintained to protect storm water catch basins from run-off from the construction area. Appropriate erosion controls must be maintained during the project until the Site is in final stabilized condition. The Site shall be managed such that no sediment leaves the work site to protect water quality of the Concord and Merrimack Rivers.
(2)	At the start of the project, an on-Site meeting will be held to go over planned work for the day, to ensure all workers are 40-hour HAZWOPER trained, and to discuss health and safety issues, and go over soil management and MCP-specific issues. For that day, persons will be identified who are responsible for health and safety issues, evaluating soils and groundwater for evidence of contamination, managing dust suppression, and managing erosion controls. All erosion control and dust suppression controls must be in place prior to beginning work for that day.
(3)	Soils disturbed during removal activities shall be continuously inspected for visual and olfactory evidence of contamination. This evidence includes but is not limited to stained soils, presence of free-phase product and odors. The air space immediately above the soils will be periodically screened during the day using a photoionization equipped with a 10.6 eV lamp (10.6 eV PID).

	Note: Based on the existing headspace screening data for test borings, no elevated headspace readings were encountered and are unlikely to be encountered during this project.
(4)	During removal of soils from the courtyard, soils with no evidence of contamination should be segregated from soils with visible/olfactory/screening evidence of contamination.
(5)	If evidence of soil contamination is encountered, refer to part B. Requirements for Soil Excavation , below, for further instructions.
(6)	<p>During soil disturbance activities, disturbed soil and/or stockpiled soils shall be lightly sprayed with water to prevent dust generation. Soil moisture shall be monitored continuously and water applied to the excavation area and the excavate material, as needed, and if the soils are dry during windy conditions. If site conditions become windy, and excessive dust generation is likely, stop work and apply water to the area, including any stockpiled soil. Decontaminate trucks, covered dumpsters or heavy equipment prior to leaving the Site in order to remove dust, soils and other debris.</p> <p>Water used for dust suppression cannot be obtained from the Concord or Merrimack Rivers or associated waters. The water must be free of oil, acid, alkali, hazardous materials above MMCLs, vegetative matter and sediments and shall not be salt or brackish. The use of water for dust suppression must be monitored carefully so that runoff does not impact wetland resource areas, storm drain basins or cause erosion.</p>
(7)	During all soil disturbance activities, dust monitoring must be continuously conducted following the procedures in GEC's Dust Monitoring Plan (Appendix F-4). Dust monitoring will be conducted at two of the four ambient air asbestos monitoring stations. Personal asbestos air monitoring and ambient air asbestos monitoring must be conducted in accordance with Axiom's NT (Appendix F-1). The air monitoring stations are identified in Figure 10A.
(8)	Fill will be needed to create the protective cover over the courtyard soils, upon completion of all excavation activities. Other fill may be needed to backfill excavations. Any fill brought onto the site must be clean material. It may not contain trash, refuse, rubbish or debris. In addition, the clean fill cannot contain oils or hazardous materials at levels exceeding the Soil Reporting Category 1 (RCS-1) Reportable Concentrations provided in the MCP. The origin of the soils and certification / laboratory reports documenting the soils are clean must be provided, for submittal to the MassDEP in the IRA Status Report or IRA Completion Report.
(9)	Six different marker layers will be used for this project: (1) three distinctively different colors of geotextile fabric, one color each for (a) two clean utility corridors, (b) the soil repositories identified as the utility vault and FO-1, and (c) the initial covering of the protective cover, which will be installed over courtyard soils located three feet below grade (based on grade prior to starting the IRA; (2) 3-inch layer of gravel to be placed over the geotextile fabric covering the utility vault and FO-1 soil repositories; (3) concrete that will seal the tops of the five soil repositories, identified as four dry wells and one modified coal chute; and (4) for the FO-1 soil repository, orange snow fencing that will be used to line the sidewalls of the repository (before the geotextile fabric is placed inside the snow fencing to line the sidewalls and bottoms of FO-1.
(10)	Clean utility corridors will be approximately 4 feet wide, and will be lined with

	geotextile fabric to separate it from surrounding contaminated soils. It will extend from below the utility line or structure to at least three feet below final grade. The utility corridor will be backfilled with clean soils or similar material suitable to support the utility line. Each clean utility corridor will be covered with the same geotextile fabric. The clean fill, comprising the protective cover shall be placed on top of the clean utility corridor.
(11)	During rain events or overnight work stoppage, the disturbed soils must be temporarily stabilized using 6-mil polyethylene sheeting and ¾-inch plywood. A construction fence or other barrier must be placed around the disturbed soils during work stoppage, to mitigate access by others to the work area, unless access to the courtyard is secured.
(12)	All soils across the courtyard must be covered with 6-mil polyethylene sheeting, weighed down with ¾-inch plywood, until determined to be clear of asbestos. All stockpiled soils must be covered with 6-mil polyethylene sheeting, weighed down with ¾-inch plywood, at all times except when soils are being added or removed from the stockpile or soil samples are being collected from the stockpile for analysis.
(13)	No soil disturbance work shall be conducted beyond the erosion control barrier. No construction materials, clean fill, debris, brush, leaves or other materials may be placed beyond the project work limit.
(14)	All soil disturbance activities shall be limited to daylight hours.
(15)	No equipment, materials, debris or waste may be placed beyond the erosion control barriers. No equipment or materials may be removed from the courtyard without first going through decontamination and/or obtaining permission from the Massachusetts-licensed Asbestos Project Manager or LSP. No asbestos debris or wastes may be removed from the courtyard without obtaining permission from the Massachusetts-licensed Asbestos Project Manager and/or LSP. No remedial waste, remedial wastewater or other debris may be removed from the courtyard without the permission of the LSP.
(16)	All brick or concrete removed from the dry wells or coal chute to prepare final soil repositories shall be handled, containerized and disposed as asbestos-contaminated debris, in accordance with the requirements of Axiom's NT (Appendix F-1). All plywood and polyethylene sheeting used prior to clearing an area of asbestos contaminated material shall be handled, containerized and disposed as asbestos-contaminated debris, in accordance with Axiom's NT. All personal protective equipment and other wastes generated during the asbestos portions of this project shall be handled, containerized and disposed as asbestos-contaminated debris, in accordance with Axiom's NT.
(17)	Following the completion of construction and grading, all exposed soils must be restored to the previous grade and permanently stabilized with a protective cover, such as a marker barrier overlain by three-feet of clean soils planted with vegetation.
(18)	Erosion control devices may be removed from the Site when soils are permanently stabilized.

B.	Requirements for Soil Excavation
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(1)	<p>Between 1,000 and 2,000 cubic yards of shallow soils contaminated with asbestos/PCBs or PCBs will be excavated from the courtyard to at least three feet below final grade and placed in permanent on-Site soil repositories. If a soil repository is not ready for any of these excavated soils, the soils shall be stockpiled and covered by 6-mil polyethylene sheeting weighed down with ¾-inch plywood. Soil stockpiles containing or suspected of containing asbestos shall be placed at the west end of courtyard. Soil stockpiles with no detectable asbestos shall be placed on the east central portion of the courtyard. An orange snow fence shall be placed between the asbestos and non-asbestos stockpiled soils. If more than 2,000 yards of soils will be excavated, notify the LSP immediately so that permission can be obtained from MassDEP to proceed. Excavated soils will be inspected for evidence of contamination, including jar headspace screening of composite soil samples using a 10.6 eV PID. A daily log must be maintained of the volume of excavated soils and jar headspace screening results for inclusion in the IRA Status Report and IRA Completion Report. Refer to part D. GEC Contacts for the name and contact information of the LSP.</p>
(2)	<p>Removal of asbestos-contaminated soils will be done in one- to two-foot increments. Following each round of excavation, the Massachusetts-licensed asbestos manager will divide the excavated area of the courtyard into sections, and will collect five 0-1 inch soil samples from each section. For each section, these soil samples will be composited into a single sample, placed into a labeled container (e.g., Whirlpak™ sample bags), and submitted under chain of custody documentation to a Massachusetts-certified laboratory for analysis of asbestos via USEPA Method 600/R-93/116. The soils will be covered with clean 6-mil polyethylene sheeting pending the analytical results. If asbestos is detected in the composited sample for any section, the one-foot interval excavation and composite sampling will be repeated, until no asbestos is detected or at least three feet below final grade (it may extend deeper to allow excavation of petroleum contaminated soils at the east end of the courtyard). Each portion of the courtyard cleared of asbestos will be covered with clean 6-mil polyethylene sheeting, weighed down with ¾-inch plywood, until remediation is completed in the courtyard and the protective barrier will be installed.</p>
(3)	<p>Significant soil excavation will be conducted at the east end of the courtyard. Between 1,000 and 2,000 cubic yards of petroleum-contaminated soils will be excavated from the fuel oil bunker area east to the retaining wall. The depth of excavation may extend to approximately 18 to 20 feet below current grade. No person may enter the excavation hole, except by following OSHA requirements for entrance to an excavation hole and/or confined space. The need for shoring (of the excavation wall, foundation wall or retaining wall) or step-down of the excavation hole shall be assessed by a Massachusetts-licensed structural engineer. Subsurface structures, likely comprised of concrete or brick, may exist in the subsurface. If these structures are tied into a building foundation or retaining wall, their removal may affect the structural integrity of the building or retaining wall. A structural engineer should evaluate each situation.</p>
(4)	<p>Soils not containing significant contamination must be excavated to gain access to the petroleum-contaminated soils. The soils with no visible evidence of petroleum</p>

	contamination must either be stockpiled in the east central portion of the courtyard, temporarily stored in the FO-1 soil repository or used as backfill elsewhere within the east end at depths more than 3 feet below final grade. If more than 2,000 cubic yards of petroleum-contaminated soils will be excavated, notify the LSP immediately so that permission can be obtained from MassDEP to proceed. Excavated soils will be inspected for evidence of contamination, including jar headspace screening of composite soil samples using a 10.6 eV PID. A daily log must be maintained of the volume of excavated soils and jar headspace screening results for inclusion in the IRA Status Report and IRA Completion Report. Refer to part D. GEC Contacts for the name and contact information of the LSP.
(5)	Soil samples must be collected from the bottoms and sidewalls of the petroleum-contaminated soil excavations, and submitted under chain-of-custody documentation for analysis of EPH and PAHs via MassDEP's method and for total petroleum hydrocarbons via USEPA Method 8100M.
(6)	If permitted by the receiving facility, based on existing disposal criteria data, all or some of the petroleum-contaminated soils may be live-loaded by moving soils along the corridor and filling roll-off dumpsters and/or dump trucks for immediate transport to the receiving facility. If disposal criteria data is needed for excavated soils prior to shipment, composite soil samples from the contaminated stockpiled soils must be analyzed for disposal criteria so that the appropriate receiving facility can be identified. All petroleum-contaminated soils must be transported off-site for treatment, recycling or re-use. Only if treatment, recycling or re-use is not feasible can soils be shipped off-site for disposal. The LSP or his/her designee will determine what disposal criteria testing needs to be done and the numbers of samples needed, and will identify the potential receiving facility. No soils can be transported off-site without authorization from the LSP and receiving facility. Refer to part D. GEC Contacts for the name and contact information of the LSP.
(7)	The LSP or his/her designee will evaluate all analytical data to determine the following: (1) whether the soils are suitable for re-use within the disposal Site or must be transported under a Bill of Lading or Hazardous Waste Manifest to an appropriate receiving facility for treatment, recycling, re-use or disposal; (2) whether a new reportable condition exists; (3) whether further excavation of contamination is necessary, which may require an IRA Plan Modification or obtaining verbal authorization from MassDEP; and (4) whether additional investigation is required.

C.	Removal of Oil or Oily Water from Excavation Hole (as needed)
(1)	If the excavation proceeds according to plan, groundwater will likely be encountered. Therefore, when setting up for petroleum-contaminated soil excavation, equipment should be on hand for dewatering the excavation and storage of oily water. If groundwater is encountered during petroleum excavation, immediately contact the LSP. Up to a <u>cumulative total of 2,000 gallons of oily water</u> is estimated to be pumped from the bottom of the petroleum excavations and stored in frac tank(s). Following disposal criteria testing, the oily water should be transported by ENPRO Services, Inc., under a Hazardous Waste

	Manifest, for reclamation. If more than 2,000 gallons of oil/water is recovered, the LSP should be notified immediately so that the MassDEP can be notified of the new volume. Refer to part D. GEC Contacts , for the contact information for GEC's LSP.
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D.	GEC Contacts
(1)	Brian Butler, LSP 5736 Tel: 781-356-9140 x113 Cell: 781-799-0385 Email: bbutler@goldmanenvironmental.com
(2)	Andrew Foley Tel: 781-356-9140 x150 Cell: 808-747-3616 Email: afoley@goldmanenvironmental.com

**NON-TRADITIONAL ASBESTOS ABATEMENT WORK PLAN
FOR THE REMEDIATION OF CONTAMINATED SOILS**

**MASSACHUSETTS MILLS III COURTYARD
150 MASS MILLS DRIVE
LOWELL, MASSACHUSETTS**



PREPARED FOR:

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179 Boylston Street
Jamaica Plain, Massachusetts 02130**

PREPARED BY:

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November 3, 2016

REVISION 5

Job Number 01136.283

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Attachment 1 – Dumpster Soil Bulk Sample Results for Asbestos Content

Attachment 2 – Stockpile and Courtyard Soil Bulk Sample Results for Asbestos Content

Attachment 3 – Stockpile and Courtyard Soil Bulk Sample Locations

Attachment 4 – Work Area Site Plan

Attachment 5 – Equipment Washing Station

ABATEMENT PLAN CERTIFICATION

This report has been prepared for the exclusive use of the Client, MM Picker, LLC (Picker). Photocopying of this document by parties other than those designated by the Client, or use of this document for purposes other than it is intended, is prohibited.

Respectfully submitted on this 28th of July 2016.

Respectfully resubmitted on this 1st of September 2016.

Respectfully resubmitted on this 18th of September 2016.

Respectfully resubmitted on this 4th of October 2016.

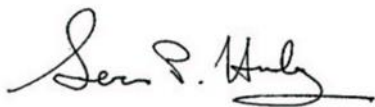
Respectfully resubmitted on this 13th of October 2016.

Respectfully resubmitted on this 3rd of November 2016.

Reviewed by:

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Prepared by:



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Reviewed by:

Authorized Personnel
MM Picker, LLC

A. INTRODUCTION/BACKGROUND

This Non-Traditional Work Plan (Work Plan) has been prepared, in part, to be an attachment to a formal Immediate Response Action (IRA) Plan Modification for 169.2 Bridge Street, Lowell, Massachusetts. The original IRA Plan was prepared to address the discovery of a petroleum release and RTN 3-33101. It has been updated to address PCBs, metals and pesticides in the soil and RTN 3-33853 Dated October 31, 2016. It is modified here to address the discovery of asbestos fibers in soil that require onsite reuse. No confirmatory sampling for asbestos will be conducted. The original IRA Plan and the IRA Plan Modification has details on what soils are being removed from the site for disposal and which soils will remain onsite.

A portion of the former Mass Mills complex (Lot 3A/3B) in Lowell, Massachusetts, is currently under extensive renovation. The Picker Building (Lot 3A) has been gutted and efforts are underway to convert the space into residential housing.

Soil in the courtyard on Lot 3B (the "Courtyard") was determined to contain PCBs above 50 ppm, and this material was stockpiled at the northwestern end of the Courtyard and covered with polyethylene plastic sheeting. Lined dumpsters were filled with contaminated soil in preparation for transport to and disposal in an EPA-approved landfill for PCB-contaminated materials.

At the request of the Massachusetts Department of Environmental Protection (MassDEP), Axiom Partners, Inc. (AXIOM) performed sampling of the soil in these dumpsters in June 2016 to evaluate the material for asbestos content. For each dumpster, a sample was compiled from soil collected in five locations within the dumpster. Bulk samples were collected and immediately placed in labeled containers (e.g., Whirlpak™ sample bags) which were assigned a unique sample number and sealed for submission to the laboratory for analysis. The samples were hand-delivered to a Massachusetts-licensed asbestos bulk sample laboratory. Chain-of-custody documentation was used to ensure sample integrity. The laboratory analyzed the samples for asbestos content by the EPA Method 600/R-93/116. All composite samples of this soil were found to be negative for the presence of asbestos. Please refer to the attached analytical results Attachment 1.

At the request of MassDEP, AXIOM returned to the site in June of 2016 and performed sampling of stockpiled soil and remaining soil in the Courtyard for asbestos content. AXIOM delineated the stockpiled soil into three areas and the Courtyard into six areas for the purposes of sampling. Collection of composite samples in each of these areas was conducted as described above. The samples were hand-delivered to a Massachusetts-licensed asbestos bulk sample laboratory for analysis by EPA Method 600/R-93/116. All composite samples collected from 0-1 inch these areas were found to contain asbestos. Please refer to the attached analytical results and site plan showing sampling locations Attachment 2 and Attachment 3.

Soils in the Courtyard have been fully covered with a layer of 6-mil polyethylene plastic sheeting at the request of MassDEP. Signage indicating asbestos contamination has been posted at the entry to the Courtyard and on the building at Lot 3A/3B.

Based on these circumstances and the location of the material, compliance with the following requirements in 310 CMR 7.00 is not feasible (at a minimum):

- 310 CMR 7.15 (7)(c), Specific Abatement Work Practice Standards

➤ 310 CMR 7.15 (7)(e), Work Area Ventilation Requirements

Upon receipt of MassDEP approval and the submittal of required regulatory notifications, the purpose of this Work Plan is to establish parameters in compliance with governing asbestos regulations for the safe onsite reuse of contaminated soil which may also contain asbestos fibers.

B. PROJECT PERSONNEL

As required by governing regulations, the Asbestos Contractor shall have one or more “Competent Persons” on site at all times during the safe onsite reuse of contaminated soil related activities to ensure compliance with this Work Plan. The Asbestos Contractor shall be required to be a Massachusetts-licensed Asbestos Contractor and all personnel working directly with asbestos-contaminated soils shall be Massachusetts-licensed Asbestos Workers/Supervisors or Supervisors with proper and current medical clearances, respirator fit test documentation and 40-hour HAZWOPER credentials.

The Competent Person must have attended a comprehensive training course for contractors and supervisors certified by the U.S. Environmental Protection Agency (EPA) or a state-approved training provider.

The Asbestos Contractor will identify each Competent Person qualified and authorized to ensure worker safety and health as required by 29 CFR 1926.20, Subpart C, *General Safety and Health Provisions for Construction*. The Competent Person will frequently inspect the job site, materials and equipment throughout the course of abatement and abatement-related activities.

The Competent Person will supervise:

1. The establishment of, and ensure the integrity of, regulated areas or enclosures by onsite inspection;
2. The establishment of procedures for controlling entry to and exit from the regulated work area(s);
3. All employee exposure monitoring, ensuring it is properly conducted;
4. The use of required protective clothing and equipment by employees working within the regulated work area(s);
5. The proper establishment, performance and removal of engineering controls, work practices and personal protective equipment through onsite inspections;
6. Employee use of hygiene facilities and required decontamination procedures; and
7. Notification requirements.

AXIOM will have a Massachusetts-licensed Asbestos Project Monitor (APM) onsite during remedial activities including soil excavation and or onsite relocation/reuse operations to observe and record progress and conduct air monitoring in accordance with Section E of this document.

The following information is for relevant project personnel involved in the daily execution of the Work Plan as well as monitoring/sampling duties:

Title	Name / Company	Phone Number
Construction Manager / Project Manager	Steve Draleau Dellbrook Construction, LLC	(508) 540-6226
Site Superintendent	Individual TBD Dellbrook Construction, LLC	TBD
License Site Professional	Brian T. Butler, LSP, PG Goldman Environmental Consultants, Inc.	(781) 356-9140
Environmental Scientist	Andrew Foley Goldman Environmental Consultants, Inc.	(808) 747-3616
MA Licensed Abatement Contractor	Infinity Abatement Services, Inc. AC000733	(978) 208-7256
MA Licensed Asbestos Supervisor	Mauricio Ferreira AS001078	(978) 208-7256
Asbestos Consultant	Sean P. Hurley, Principal Axiom Partners, Inc. AD061454	(617) 285-3441
MA Licensed Asbestos Project Monitor	Individual TBD Axiom Partners, Inc.	(781) 213-9198
Waste Transporter	Services Transport Group, Inc.	(877) 999-9559
Waste Landfill	Minerva Enterprise, Inc.	(330) 866-3435

C. RELATED CODES AND STANDARDS

The publications listed below typically determine the type and procedure for asbestos abatement activity and are referred to within the text of this document by designation only. The work practices identified herein have incorporated the substantive requirements of these codes and standards. The current edition of each reference has been utilized.

1. Environmental Protection Agency

- 40 CFR Part 61, Subpart M *National Emission Standard for Asbestos*
- EPA 560/5-85-024, *Guidance for Controlling Asbestos-Containing Materials in Buildings* (June 1985)
- EPA 340/1-90-019, *Asbestos NESHAP Adequately Wet Guidance* (Dec. 1990)
- EPA 340/1-90-019, *Asbestos NESHAP Regulated Asbestos Containing Materials Guidance* (Dec. 1990)

- EPA 340/1-92-013, *Demolition Practices Under the Asbestos NESHAP*
- 2. Occupational Safety and Health Administration
 - 29 CFR 1910.1001 (Subpart Z), *Asbestos (General Industry)*
 - 29 CFR 1926.1101 (Subpart Z), *Asbestos (Construction)*
 - 29 CFR 1910.134 (Subpart I), *Personal Protective Equipment (General Industry)*
 - 29 CFR 1910.141 (Subpart J), *General Environmental Controls (General Industry)*
- 3. Massachusetts Asbestos Regulations
 - 453 CMR 6.00, *The Removal, Containment or Encapsulation of Asbestos*
 - 310 CMR 7.00, *Air Pollution Control Regulations* and specifically 310 CMR 7.15, *Asbestos*
 - 310 CMR 19.061, *Solid Waste Management, Special Waste*
 - 310 CMR 40.0000, *Massachusetts Contingency Plan*, regarding waste site clean-up requirements
 - 310 CMR 4.00, *Timely Action Schedule and Fee Provisions*
 - 310 CMR 5.00, *Administrative Penalty*

D. SITE SPECIFIC ABATEMENT WORK PRACTICES

The following site-specific work practices and engineering controls will be employed for the remediation (excavation and/or onsite reuse) of contaminated soil which may also contain asbestos fibers.

1. The MassDEP will be notified prior to the beginning of remediation and abatement activities and in the event of any changes to site conditions or anticipated work activities. Once the area has been set up, but prior to abatement, MassDEP may conduct a pre-abatement visual inspection of the site. The abatement contractor shall provide a minimum of 24 hours' notice for scheduling of this inspection.
2. The soil stockpile and the soil in the Courtyard are within a secure construction site. Asbestos warning tape and signs will be used to demarcate the area where asbestos-related work activities will be performed (the regulated work area).
3. The Power House (old boiler room) interior lower windows facing the Courtyard will be sealed with wood barriers which will remain in place. The outer window frames will be sealed with polyurethane barriers that will remain until the completion of the remediation project, removed and decontaminated and disposed of as waste. The Picker building windows are newly installed and will be sealed with polyurethane barriers that will remain until the completion of the remediation project, removed and decontaminated and disposed of as waste.
4. A remote worker decontamination facility (DF) will be established at the site immediately adjacent to the regulated work area. All workers including heavy equipment operators will enter and exit the regulated work area through the DF.

5. Asbestos Workers and Supervisors who are directly involved with asbestos-contaminated soils in the Courtyard shall be Massachusetts-licensed Asbestos Workers or Supervisors with proper and current medical clearances, respirator fit test documentation and 40-hour HAZWOPER credentials.
6. All other personnel entering the regulated area during remediation activities (e.g., licensed site professionals, environmental scientists) or touching the contaminated soils (e.g., supplemental soil sampling) shall have proper and current medical clearances, respirator fit test documentation and 40-hour HAZWOPER credentials.
7. Open top dumpsters will be positioned immediately adjacent to the Courtyard and lined with two form-fitted 10-mil premanufactured bladder bags.
8. After work area preparation has been completed and approved by Picker or their representative (e.g., (GOLDMAN or AXIOM), soils to be disposed offsite will be pre-wetted and heavy equipment (e.g., excavators, front end loaders) will bulk load soil directly into the lined disposal containers. There shall be no visible emissions and no water run-off at any time during this process.
9. A Massachusetts-licensed APM will be on site to work with the remediation contractor to ensure that the onsite reuse of the soils is conducted in accordance with federal and state regulations, this Work Plan and the IRA Plan Modification.
10. Prior to and continuously during the work, the soil shall be thoroughly wetted using water in sufficient pressure and quantity to reduce the generation of airborne dust and prevent visible emissions. The soil shall be kept wet while collected for disposal or relocation onsite.
11. Upon project completion, all tools and associated heavy equipment shall also utilize the decontamination facility prior to exiting the regulated area.
12. Transportation vehicles will be properly placarded with Department of Transportation (DOT) approved 2212 placard labels identifying contaminated soils/waste.
13. Perimeter air monitoring will be conducted and will be performed by an APM during alternative work practice and remedial activities. Section E of this Work Plan details the perimeter air monitoring.
14. MassDEP may conduct a post-abatement visual inspection. The abatement contractor shall provide a minimum of 24 hours' notice for scheduling of this inspection. An APM with the site supervisor will conduct a final visual inspection of the remediation area.

E. NON-ABATEMENT AND NON-REMEDICATION RELATED SITE ACTIVITIES

1. General construction and demolition personnel will require access to the Courtyard to perform limited demolition of building components prior to the completion of soil remediation activities.

2. A travel way has been created approximately 10 feet wide and approximately 140 feet long running along the Picker Building (east to west) on the north side from the Arcade (east side along the Concord River) to an existing masonry shaft. The travel way is constructed of a base layer of 6-mil clear polyethylene plastic sheeting (poly) covered by a 20-mil layer of black poly. A layer of 3/4-inch plywood was placed on the poly to protect it from tears and punctures and then covered with a second layer of 20-mil black poly. At the direction of MassDEP, the soils in the Courtyard are completely covered with one layer of 6-mil poly.
3. In order to continue with the building demolition work behind the Picker Building it is necessary to lay down a gravel road to eliminate disturbance to the surficial soils and worker exposure to contamination including asbestos fibers, elevated concentrations of metals and PCBs in soil. Currently the Courtyard behind the building is covered with polyethylene sheets and some plywood. Dellbrook will place clean processed gravel beginning at the entrance to the Courtyard moving northwesterly along the back of the Picker Building to the portion of the building to be razed. The gravel will be placed directly on the poly and will be approximately 3 to 6 inches thick. The road will run about 100 feet and surround the portion of the building being demolished. It will be approximately 8 to 10 feet in width, wide enough to accommodate personnel and heavy equipment.
4. Heavy equipment will not be placed on or driven directly over the poly. The road and poly throughout the Courtyard will be maintained as long as the work is being conducted. Once the demolition work is complete and all equipment and materials have left the site, the gravel road will be managed in accordance with the ongoing response actions. The road will be used to backfill and regrade the Courtyard. Ultimately this material will be covered with a geotextile marker layer followed by three feet of clean material.
5. The existing masonry shaft will be demolished to its foundation. This will be performed by a mini-excavator, which will knock the brick chase down into itself and then use its bucket to load either a skid steer bucket or a mini front-end loader. The skid steer or loader will use the plywood travel way as a road to haul the removed brick from the rear of the building to the front, through the Arcade on the east side, where the brick will be placed in dumpsters staged for removal and disposal.
6. The Contractor and Subcontractor shall perform regular inspections to insure the poly and plywood layers remain intact and in good condition. The project's licensed site professional (LSP) will also conduct periodic inspections of the poly and plywood protective barrier. In the event that the poly and/or plywood become damaged, the Contractor, Subcontractor, LSP and/or the Competent Person shall have the right and responsibility to stop work until the damage has been repaired or new poly and/or plywood have been installed.
7. Upon completion of demolition of the masonry shaft, the two 20-mil layers of poly and single layer of plywood will be removed. The bottom layer of 6-mil poly shall remain in place throughout the Courtyard until soil remediation activities are completed.

F. PROJECT MONITORING

1. AXIOM will have a Massachusetts-licensed APM onsite during remediation related activities to observe the work for regulatory compliance with federal and state regulations and this

Work Plan, to document the work and to perform ambient air monitoring. Compliance with the overall IRA Plan Modification will be determined by others.

2. **Ambient Air Monitoring:** AXIOM's APM will conduct continuous exterior perimeter "fence-line" air monitoring during remediation and asbestos abatement, live load-out procedures and asbestos-related activities using high-volume electric pumps. Whenever practicable, a minimum of four air monitoring stations shall be established around the perimeter of the regulated work area to the north, south, east and west of abatement activities. The APM shall consider wind direction with respect to adjacent buildings and walkways to ensure that circumferential monitoring points coincide with downwind and other sensitive receptors.

Please refer to Attachment 4 for the locations of the proposed air monitoring stations. These locations are approximate and may be adjusted depending upon the work being performed each shift. Location adjustments will be for the purpose of protecting sampling equipment and cassettes from damage due to the movements of equipment and personnel, but will remain in the same general locations to the extent feasible.

Perimeter air samples shall be collected at a minimum of 54 inches and a maximum of 72 inches above ground level. Each air filter cassette shall have the start and stop time and associated start and stop flow rates recorded in the APM's site log. At the request of MassDEP, two sets of air samples shall be collected per 8-hour shift (i.e., one set of samples every four hours).

All air monitoring shall be performed by consultants who are properly trained and licensed in the Commonwealth of Massachusetts (Commonwealth) as Asbestos Project Monitors. All sample analysis shall be performed by consultants who are properly trained, are successful participants in the American Industrial Hygiene Association's Asbestos Analytical Registry (AIHA's AAR), or alternatively, who work for a laboratory, which is licensed by the Commonwealth to perform such analysis and is accredited with either the AIHA or National Voluntary Laboratory Accreditation Program (NVLAP). Air samples will be analyzed daily and results reported to the Asbestos Contractor and the General Contractor.

The collection and analysis of phase contrast microscopy (PCM) air samples shall be in accordance with the NIOSH 7400 Method. PCM analysis will be performed on site by a Massachusetts-licensed APM to facilitate immediate corrections in the Asbestos Contractor's work practices as necessary. Air sample results shall be e-mailed to MassDEP on the day they are collected.

If air sample results reach or exceed the Massachusetts Department of Labor Standards (MA DLS) clean air criteria of 0.010 fibers per cubic centimeter (f/cc) of air, then all work shall stop. The work methods shall be evaluated prior to continuing any further work and MassDEP shall be notified by telephone within two hours. If the airborne fiber concentrations reach or exceed the OSHA Permissible Exposure Limit (PEL) of 0.1 f/cc of air, then work shall stop, MassDEP shall be notified by telephone immediately and the requirements for elevated airborne fiber levels in Item 4 of this section will be followed.

3. **Personal Exposure Monitoring:** The Asbestos Contractor shall have their Competent Person oversee exposure monitoring to accurately determine the airborne concentrations of asbestos to which employees may be exposed. This monitoring shall be conducted in

accordance with OSHA 29 CFR 1926.1101, *Asbestos in Construction*. A sufficient number of workers performing remediation and asbestos abatement activities will be monitored initially and on a daily basis to effectively evaluate worker exposure for specific work activities. At least ten percent (10%) of each employer's work force shall be monitored on a daily basis.

Sampled workers will be outfitted with low-flow personal air pumps to collect air samples within the workers' breathing zone (within 6 to 9 inches of the nose and mouth). The Asbestos Contractor will log the start/stop times and associated start/stop flow rates on an appropriate chain-of-custody air sampling form. Pumps will be calibrated prior to use in accordance with manufacturer's instructions and checked daily with calibrated rotameters. Samples will be analyzed by properly qualified and licensed personnel.

Air monitoring samples which are overloaded with particulate and cannot be analyzed shall be considered to be out of compliance with this Work Plan.

The Asbestos Contractor will ensure that no employee is exposed to airborne asbestos concentrations exceeding 0.1 f/cc during an 8-hour time-weighted average (TWA). If the airborne fiber concentrations reach or exceed the OSHA PEL of 0.1 f/cc, all work will stop immediately, MassDEP will be notified, and the requirements for elevated airborne fiber levels in Item 4 of this section will be followed.

Although half-face air-purifying respirators are specified as the minimum respiratory protection required for this project, the Asbestos Contractor shall determine actual respirators necessary for the project based on one or more exposure assessments performed by properly qualified individuals. Prior to obtaining exposure assessment results, the Asbestos Contractor shall require all Asbestos Workers and Supervisors to wear half-face air-purifying respirators within the regulated work area.

4. **Elevated Airborne Fiber Levels:** The following procedures shall be employed by the APM in the event that airborne fiber levels greater than 0.010 f/cc are measured outside the regulated work area(s):
 - a. Stop all work immediately and notify MassDEP;
 - b. Restrict access to critical personnel;
 - c. Instruct the Asbestos Contractor to perform additional wetting and air misting procedures to reduce airborne fiber levels;
 - d. With MassDEP (as appropriate), General Contractor and Asbestos Contractor, evaluate effectiveness of existing work practices and engineering controls, and implement additional controls as necessary; and
 - e. Conduct additional air monitoring until airborne asbestos fiber levels are within acceptable levels.

G. PERSONAL PROTECTIVE EQUIPMENT (PPE)

1. Respiratory Protection

Respirators will be used during the following activities:

- a. All work performed within a regulated area where respirators are required; and
- b. All work where employees are or may be exposed to airborne asbestos fiber concentrations at or above the OSHA PEL.

The Asbestos Contractor will provide respirators to their respective employees, selecting the appropriate type from among those approved by the National Institute of Occupational Safety and Health (NIOSH). The Asbestos Contractor will be required to have a written respiratory protection program that will be in full force for the duration of this project. The respiratory protection program shall comply with governing regulations and will include respirator selection and use, medical clearance for respirator use and medical surveillance for asbestos exposure (reference 29 CFR 1910.134).

The Asbestos Contractor will provide, at a minimum, half-face air purifying respirators equipped with P-100 high-efficiency particulate air (HEPA) filters because most of the remediation and/or abatement work will involve directly impacting presumed asbestos-containing materials (pipe insulation) or contaminated soil containing asbestos fibers. A negative exposure assessment (NEA) may be performed by qualified individuals and reviewed by a Certified Industrial Hygienist (CIH) for activities that are not expected to result in worker exposures at or above the OSHA PEL.

If a particular task is not addressed herein and worker exposure is at or above the PEL, the OSHA asbestos standard, 29 CFR 1926.1101 specifies additional respiratory protection requirements.

2. Protective Clothing

The Asbestos Contractor will require workers to wear protective clothing consisting of, at a minimum, disposable Tyvek or equivalent suits, nitrile gloves, rubber boots and safety glasses, as well as any other personal protective equipment required for compliance with the IRA Modification Plan. The protective clothing will be required for the following tasks:

- a. Activities when an employee may be exposed to airborne asbestos concentrations at or above the PEL;
- b. Activities without a NEA reviewed by the CIH; and/or
- c. Activities in which an employee may perform work involving the removal, packaging or disposal of ACM's.
- d. The Asbestos Contractor will package, transport and dispose of contaminated clothing in sealed, impermeable bags or other approved containers bearing appropriate asbestos warning labels. The Competent Person will periodically examine employee protective clothing to ensure compliance with this Work Plan. Rips or tears in protective clothing must be mended or the clothing must be replaced immediately.

H. REGULATED WORK AREAS

Only properly trained personnel with appropriate, applicable Massachusetts asbestos licensing, appropriate asbestos training, appropriate HAZWOPER training and proper personal protective equipment/clothing may enter a regulated area. Visitors to the work site will be briefed on the nature of the work and the regulated area requirements. Only visitors with appropriate, applicable licenses, appropriate asbestos training and proper personal protective equipment/clothing will be

allowed inside a regulated area. Please refer to Attachment 4 for the extent of the regulated work area.

All affected areas of the site shall be contained within a regulated work area. This includes any adjoining area(s) where debris and asbestos waste accumulates or where airborne concentrations of asbestos exceed or may exceed the PEL.

All asbestos abatement work or any other operations where airborne asbestos can potentially exceed the PEL will only be performed within regulated area(s). The designated Competent Person will supervise all asbestos work performed in the regulated area(s).

The Asbestos Contractor will demarcate the regulated area(s) in any manner that minimizes the number of persons within the area, prevents access by unauthorized personnel and protects persons outside the area from exposure to airborne asbestos. Red asbestos demarcation tape (asbestos warning barrier tape) will be used to define the regulated work area. Additionally, proper asbestos warning signs will be prominently displayed at all points of access to the regulated area(s). The signs will bear the following information:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORY AND PROTECTIVE CLOTHING ARE
REQUIRED IN THIS AREA

The Asbestos Contractor will provide all employees with appropriate respirators. Employees will not eat, drink, smoke, chew tobacco or gum or apply cosmetics in regulated area(s). The Asbestos Contractor will work in advance of all other construction personnel. The Asbestos Contractor will inform other building/site occupants (construction personnel) of the following:

1. Nature of the work;
2. Regulated work area requirements; and
3. Measures taken to protect employees.

I. HYGIENE FACILITIES

The Asbestos Contractor will establish a remote, three-chamber decontamination facility (DF) immediately adjacent to the regulated work area(s) for the decontamination of employees and their equipment. All equipment and the surfaces of containers filled with asbestos-contaminated soils will be cleaned prior to removal. The Asbestos Contractor will ensure employees enter and exit the regulated work area through the DF. Please refer to Attachment 4 for the location of the decontamination facility.

The DF will be equipped with tepid water, soap, disposable towels and other items necessary for the proper containment and control of asbestos.

J. DECONTAMINATION OF EQUIPMENT

Decontamination of equipment will be conducted by first performing HEPA vacuuming followed by power washing parts of the equipment that have come in contact with asbestos-contaminated soil. Power washing will occur in a decontamination area. The decontamination area is constructed with vertical edges that are designed to contain all liquids. All waste water from decontamination procedures shall be filtered via two 5-micron filters and stored on-site for metered disposal. All water filters shall be disposed of as ACM/PACM waste. This waste may also contain other OHM. Please refer to Attachment 4 for the location of the equipment washing station. Please refer to Attachment 5 for details regarding the construction of the equipment washing station.

K. ACCESS AND NOTIFICATION OF OTHER WORKERS AT MULTI-EMPLOYER WORKSITE

All personnel entering the job site will be required to read the Work Plan before they are permitted to enter any regulated work area at the site. Access to the area(s) to be remediated or abated will be limited to personnel with proper training only.

No other trades will be permitted into the regulated work area without proper asbestos awareness training in accordance with federal, state and local regulations.

L. WASTE PACKAGING, STORAGE AND DISPOSAL

1. Debris shall be promptly containerized into one or more of the following:
 - Gaylord boxes having two (2) internal layers of form-fitting, 6-mil polyethylene liners;
 - Double-layered 6-mil asbestos waste bags; and/or
 - Open top dumpsters lined with two form-fitting 10-mil premanufactured bladder bags.
2. All waste bags and boxes shall be cleaned and sealed inside the DF. Waste bags and boxes shall then be transported from the DF to a storage container using heavy equipment as necessary.
3. All heavy equipment is to remain in the respective specific designated work area(s). No heavy equipment will be permitted to migrate in or out of regulated work area(s) without passing through the DF. Decontamination facility doors shall be equipped with polyethylene sheeting with over-lapping flaps to minimize fiber migration from the DF into unregulated space.
4. Prior to transportation of any ACM waste, waste haulers will individually seal each form-fitting bladder bag and clearly label all containers/trucks with the appropriate generator labels and DOT placards bearing the numbers 2212, as well as any additional appropriate asbestos warning labels.
5. Asbestos waste shall be transported to a landfill approved to accept asbestos- and, if necessary, PCB-contaminated materials and other OHM, as appropriate. Transportation of asbestos waste shall be in conformance with the DOT regulations 49 CFR Parts 172 and 173. Waste generated at the site may be transported to Minerva Enterprises, LLC (Minerva) located at 9000 Minerva Road, Waynesburg, Ohio.
6. Disposal of asbestos waste shall be in conformance with EPA NESHAPS regulations 40 CFR Part 61 and MassDEP regulations 310 CMR 7.00, 18.00 and 19.00.

7. An asbestos waste shipment record (AWSR) is required whenever asbestos-containing waste material is shipped. A copy of this AWSR shall be e-mailed to MassDEP on the day the material leaves the site.

M. QUALITY CONTROL

Remediation, abatement and related operations will be monitored by a minimum of one fully trained, experienced and competent Asbestos Supervisor who will work in conjunction with the Asbestos Consultant/Industrial Hygiene firm (AXIOM) and LSP firm (GOLDMAN) to comply with applicable federal, state and local regulations. This individual will ensure that safe work practices in the workplace are implemented including, but not limited to:

- Exclusion of eating, drinking or smoking; and
- Use of procedures or equipment that may reduce the effectiveness of respiratory protection or other engineering controls.

In addition, the Asbestos Supervisor will ensure that OSHA-required personal monitoring is conducted in accordance with all applicable Federal, State and local regulations. Results will be routinely posted at a designated onsite location. The Asbestos Supervisor shall have the authority to stop work and modify work practices and/or engineering controls to ensure regulatory compliance.

N. EMERGENCY RESPONSE PROCEDURES

The Contractor will post the name and address of the closest hospital with a route map illustrating the route from the work site to the hospital in a conspicuous location at the site.

A daily sign-in log will be utilized to account for all personnel and visitors entering the regulated work area. The log will be administered by the Competent Person or Site Superintendent and will be used to account for all personnel in the event of an emergency evacuation.

All personnel not involved in an emergency will proceed to the General Contractor's field office unless otherwise directed.

An assessment of the problem will be made and appropriate actions implemented. Other personnel in the work area will be evacuated to a safe distance until the Site Superintendent and/or Competent Person determine that it is safe for work to resume.

Work will not commence until all emergency response activities are completed and hazard control issues are resolved. In the event of an emergency during asbestos abatement activities, field personnel will dial 911 to access off-site emergency response personnel and equipment. In the event of a release to the environment, the MassDEP will be notified in addition to the aforementioned as applicable.

Emergency Contact Information

Agency	Telephone
Project Emergency	911
Lowell Police Department	911 (978) 937-3200 (non-emergency)
Lowell Fire Department	911 (978) 459-5553 (non-emergency)
Lowell General Hospital 1 Hospital Drive, Lowell MA	(978) 458-1411

N. DESCRIPTIONS AND CONDITIONS OF COURTYARD / NEW INFORMATION

Figure 5 of the IRA plan provided by Goldman Environmental Consultants, Inc., (GEC) shows the current conditions of the courtyard, in terms of areas excavated, existing location of the 300-400 cubic yard stockpile of excavated soils, and other key features, such as coal chute, utility vault, manholes, fuel oil bunker (FO-1) and former gasoline UST (GT-1 and GT-2) locations. There are four areas where excavation has occurred. Each is briefly described below:

1. B-11 PCB hot spot, where soils were excavated to 1.5 feet below grade. Following confirmatory sidewall and bottom sampling, part of this area was backfilled with surrounding soils to create a ramp (18 inches high at its highest end) to allow movement of soils from the east end of the courtyard to the stockpile at the west end of the courtyard.
2. At the west end of the courtyard, 1 foot of soils were excavated and placed in drywell #1. The stockpiled soils from the east end of the courtyard were placed immediately over the west end soils, because the PCB contaminant levels are comparable between the two locations.
3. At the east end of the courtyard, 1 foot of soils were excavated from the Boiler house smokestack to the retaining wall along the Concord River.
4. At the east end of the courtyard, an additional 1.5 feet of soils were excavated from the FO-1 fuel oil bunker to the retaining wall along the Concord River. Seven soil repositories were identified for the courtyard, of which five have been used. Each of the soil repositories is described below. Figure 5A depicts the used and proposed soil repositories.
1. Coal Chute: The coal chute is located along the Boiler House exterior wall, within the courtyard. The chute is constructed of concrete blocks on three sides and, until recently, was open to the Boiler House basement on the fourth side. This wall was closed to prepare the coal chute for use as a soil repository. The coal chute's dimensions are 15 feet long by 10 feet wide by 10 feet deep, and would likely hold approximately 40 cubic yards from 3 feet below grade to the bottom of the chute. The coal chute also contained debris and metal remnants along the walls. These were removed to prepare the coal chute for use as a soil repository. These activities were conducted from inside the Boiler House basement. The capacity of the coal chute is approximately 60 cubic yards. The coal chute has been backfilled with soils from the SP-2 stockpile and some of the 0-1 foot soils from the east end of the courtyard, to the top. If a landscaped area is to be placed over the coal chute, the walls of the coal chute will have to be

knocked down to approximately 3 feet below grade prior to covering the coal chute. The coal chute was temporarily filled to the top to eliminate this void space during remediation activities; if the top three feet of the coal chute is knocked down, the top three feet of soils will have to be removed. These soils are presumed to contain asbestos, in addition to PCBs.

2. Dry Well #1: This dry well is circular and constructed of brick. It is approximately 14 feet deep with a diameter of 10 feet. It has a capacity of approximately 41 cubic yards. It is filled with 0-1-foot interval soils to its top. Like the coal chute, some of the soils may have to be removed, if the walls will be knocked down 3 feet, so that a landscaped area can be constructed over the manhole. These soils are presumed to contain asbestos, in addition to PCBs.
3. Dry Well #2: This dry well is constructed of brick and has dimensions of 11 feet deep by five feet wide by five feet long. It has a capacity of approximately 10 cubic yards. It is filled with 0-1-foot interval soils to its top. Like the coal chute, some of the soils may have to be removed, if the walls will be knocked down 3 feet, so that a landscaped area can be constructed over the manhole. These soils are presumed to contain asbestos, in addition to PCBs.
4. Dry Well #3: This dry well is constructed of brick and has dimensions of 8 feet by 8 feet by 6 feet. It has a capacity of approximately 14 cubic yards. It is filled with 0-1-foot interval soils to its top. Like the coal chute, some of the soils may have to be removed, if the walls will be knocked down 3 feet, so that a landscaped area can be constructed over the manhole. These soils are presumed to contain asbestos, in addition to PCBs.
5. Dry Well #4: This dry well is constructed of brick and has dimensions of 8 feet by 8 feet by 8 feet. It has a capacity of approximately 19 cubic yards. It is filled with 0-1-foot interval soils to its top. Like the coal chute, some of the soils may have to be removed, if the walls will be knocked down 3 feet, so that a landscaped area can be constructed over the manhole. These soils are presumed to contain asbestos, in addition to PCBs.
6. Utility Vault: The utility vault is located at the west end of the courtyard. The utility void has a trapezoid shape. It is approximately 5 feet wide at one end and 16 feet wide at the other end, with a length of approximately 60 feet and a depth of 14 feet. The vault has a capacity of approximately 250 cubic yards, from 3 to 14 feet below grade (presumes top of walls of utility vault is lowered by three feet). However, a clean utility corridor will have to be created around the live sewer line approximately 4 feet wide, which will reduce the storage capacity to approximately 125 cubic yards. Again, the walls of the void would have to be knocked down to 3 feet below grade, if the planned landscaped area is to extend over this area. The utility vault currently does not contain any soils.
7. FO-1 Fuel Oil Bunker Excavation Area: The portion of the excavation of petroleum contaminated soils above the smear zone of the water table is estimated to be at least 60 feet long from east to west, 30 feet wide from north to south, and 15 feet deep (based on existing grade), with a capacity of approximately 1,000 cubic yards. The sidewalls and bottom of the repository will have to have a marker layer, comprised of a geotextile fabric or similar material. Additional excavation will have to be conducted across the water table, in areas south and east of the FO-1 fuel oil bunker. If petroleum contamination is only present across the smear zone in these areas, these areas may not be used as part of the FO-1 Fuel Oil Bunker soil repository.

Appendix P

AXIOM'S DECONTAMINATION PROCEDURES

Decontamination of field equipment is necessary to minimize the potential for the release of contamination beyond the exclusion zone of the site, reducing health hazards associated with the spread of contaminants; and to ensure the quality of samples by preventing cross-contamination. The following decontamination procedures are based on EPA regulations 40 CFR § 761.360, Subpart S.

Required Supplies

Large Equipment Decontamination: drill rig, excavator, backhoe/loader, etc.

- Decontamination pad with a foot-print larger than the equipment to be decontaminated and capable of retaining all removed contaminated material and wash water.
- Simple Green All Purpose Cleaner/Degreaser
- An approved PODF as listed in § 761.79 (c)(3)(iv) -i.e. (A) Kerosene.(B) Diesel fuel.(C) Terpene hydrocarbons. (D) Mixtures of terpene hydrocarbons and terpene alcohols.
- 2- to 5- gal manual-pump sprayer (pump sprayer material must be compatible with the solution used).
- Absorbent pads and stiff-bristle brushes that are not dissolved by the solvents/cleaners used, and that do not shred, crumble, or leave visible fragments on the surface.
- Gloves, goggles, boots, and other protective clothing that are resistant to the solvents/cleaners used.

Small Equipment Decontamination: split spoon soil sampler, bowls, dredges, saws etc.

- 5-gal plastic buckets and/or troughs big enough to fully contain the sampling equipment.
- Simple Green All Purpose Cleaner/Degreaser
- An approved PODF as listed in § 761.79 (c)(3)(iv)
- 2- to 5- gal manual-pump sprayer (pump sprayer material must be compatible with the solution used).
- Absorbent pads and stiff-bristle brushes that are not dissolved by the solvents/cleaners used, and that do not shred, crumble, or leave visible fragments on the surface.
- Gloves, goggles, and other protective clothing that are resistant to the solvents/cleaners used.

Procedures

The same Procedures Apply to Both Heavy Equipment Decontamination and Small Equipment Decontamination

1. Set up a decontamination pad that is large enough to fully contain the equipment to be cleaned and that will contain all wash and rinse water used.

1a. Setup a mister such that the entire piece of machinery is being misted with clean water during the entire decontamination process.

2. First Wash:

- a. Cover the entire surface of equipment to be decontaminated with Simple Green All Purpose Cleaner/Degreaser. Contain and collect all cleaning solutions for proper disposal.
- b. Scrub rough surfaces with a stiff-bristle brush, adding cleaning solution such that the surface is always **very wet**.
- c. Wipe smooth surfaces with a cleaning solution soaked disposable absorbent pad
- d. Mop up or absorb the residual cleaner solution and suds from all surfaces with clean disposable, absorbent pads until the surface appears dry. Note: This cleaning should remove any residual dirt, dust, grime, or other absorbent materials left on the surface during the first wash.

3. First Rinse:

- a. Rinse off the wash solution with clean water and capture the rinse water.
- b. Mop up the wet surface with clean, disposable, absorbent pad until the surface appears dry.

4. Second Wash:

- a. Cover the entire surface with an approved PODF – contain and collect any runoff solvent for disposal.
- b. Scrub rough surfaces with a stiff-bristle brush, adding an approved PODF such that the surface is always very wet.
- c. Wipe smooth surfaces with an approved PODF soaked disposable absorbent pad.
- d. Mop up or absorb the residual approved PODF from all surfaces with clean disposable, absorbent pads until the surface appears dry.

5. Second Rinse:

- a. Wet the entire surface with clean approved PODF such that all surfaces are very wet and capture the rinse approved PODF.
- b. Wipe off the residual approved PODF from the surfaces using a clean, disposable absorbent pad until no liquid is visible on the surface.

6. Documenting Decontamination:

- a. Record equipment type, date, time in logbook and document decontamination with pictures.

7. Cleanup After Decontamination:

- a. After decontamination activities are completed, collect all contaminated waters, used solvents, plastic sheeting, and disposable gloves, boots, and clothing. Place contaminated items in properly labeled drums for disposal. Liquids and solids must be drummed separately.
 - i. All wash water, rinse water, and decontamination solutions that have come in contact with contaminated equipment are to be handled, packaged, labeled, marked, stored, and disposed of as hazardous waste.
 - ii. All solids, (i.e., plastic sheeting, scrub brushes, absorbent pads, disposable gloves, boots and clothing that have come in contact with contaminated equipment are to be handled, packaged, labeled, marked, stored, and disposed of as hazardous waste.

7. Have 2 ambient air asbestos testing stations setup around the decontamination pad in order to survey if asbestos was present during the decontamination procedure. A total of 4 samples will need to be analyzed if the process takes a full work day (2 in AM, 2 in PM)

BARRIER TO ALLOW ACCESS TO THE COURTYARD FOR DEMOLITION PURPOSES

The following will be instituted prior to any demolition work proceeding in the courtyard:

1. A base layer of at least 20-mil poly sheeting will be placed on the surface of the courtyard or portion of the courtyard. (double layer of 12-mil is acceptable)
2. A center layer of plywood will be placed to ensure that the weight of the machinery does not rip through the base layer, as well as to protect the base layer from any falling debris during the demolition process.
3. Finally, a layer of 12-mil poly will be placed on top of the ply wood and base layer to ensure the integrity can be maintained. If any rips, tears, punctures occur in this layer, work will be stopped until the rip, tear, or puncture is repaired.



EQUIPMENT WASHING STATION

An equipment washing station will be constructed at the perimeter of the exclusion area out of impermeable material sufficient to prevent run-off and to allow the collection of water. The location will be directly in front of the access tunnel inside the courtyard. When excavators and other equipment are used in the exclusion area, they will remain in the exclusion area and will exit only after decontamination at the equipment washing station.

The equipment washing station will be approximately 12' x 25' to cover a small sized front end loader, and bermed to contain wash water. The equipment washing station will be lined with two layers of poly and filled with stone. The station will be sloped to a corner to accumulate wash water. Water will be filtered (5-micron filtration) and used to mist the impact area. AT completion of the work, gravel and polyethylene sheeting, Rinse water and other materials will be disposed of as TSCA PCB waste containing Asbestos at ENPRO Services of Vermont (EVI).

DUST MONITORING PROCEDURES

(November 30, 2016)

Dust monitoring is necessary to minimize the potential for exposure to contamination within and beyond the exclusion zone of the site, reducing health hazards, and to prevent fugitive migration of contamination.

GENERAL STANDARD OPERATING PROCEDURES

Notify Interested Parties and Plan for Emergencies

- Communicate the goals, type, and length of projects and specific behavior rules to the affected groups (onsite workers and residence).
- Have an emergency contact list (hospitals, police, etc.).
- Prevent unauthorized persons from entering the site.

Take General Protective Measures

- Ensure workers are properly trained.
- Choose the method that minimizes the amount of dust generated.
- Choose methods that protect workers, building users, passersby, and the surroundings of the remediation project.
- Use proper containers to hold excavated material.
- Use gloves and skin protection.
- Use eye goggles during windy conditions.
- Do not smoke, drink, or eat in the work area.
- Wash hands prior to breaks.

Exterior Areas

- Mark off the work areas to keep non-workers away.
- Cover any plants with heavy plastic sheeting.
- Close windows and doors near the work area.
- Cover the excavate material prior to off-site disposal.

Leave the Work Area Clean

- Put trash and debris in heavy-duty plastic bags.
- Ensure tools, equipment, and workers, are free of dust and debris before leaving the work area.
- Remind workers (non-HAZWOPER trained) to stay out of the work area.
- When the job is complete, remove any plastic sheeting carefully, mist with water, fold dirty side in, tape shut, and dispose of it.

Check the work area for dust. If any dust or debris is present, then wet the area to reduce the potential for dust from being picked up by the wind.

SITE-SPECIFIC PROCEDURES

Same Procedures Apply to Soil Excavation, Movement of Stockpiles, Loading, and Backfill

1. Once the soils are removed and the soils are exposed, lightly spray the surface with water to prevent dust generation. Continue to monitor the soil moisture and apply water to the excavation area and the excavate material as needed, and if the soils are dry during windy conditions.
2. If site conditions become windy, and excessive dust generation is likely, stop work and apply water to the area, including any stockpiled or loaded soil in trucks.
3. During overnight work stoppage, cover the excavation and excavate material with polyethylene sheets. Once a truck has been loaded for off- site transport of the material, cover the soil within the truck with a heavy tarp.
4. Once the excavation work has been completed, shovel, sweep or wash residual soil/dust on the pavement into the excavation.
5. Dust suppression and control shall be maintained in the excavation areas, and off-site haul roads by keeping surfaces wet and clean to prevent wind-blown dust and road mud and debris from occurring during excavation. The nearest access road and access gate area shall be kept clean during excavation activities. If necessary use street sweepers and wet by sprinkling the road surfaces with a tank, gauges, pressure pump and nozzle spray bar. Water shall be dispersed through the nozzle under a minimum pressure of 20 pounds per square inch pressure gauge. Water shall be free from oil, acid and alkali or vegetative matter and shall not be salt or brackish.
6. Air monitoring shall be provided continuously during excavation activities for PM-10 in real time data. Air monitoring shall be coordinated by GEC. Two weather proof Dust Trak II Aerosol Monitors (Model 8530) will be used to collect real-time data and placed on site down gradient of the established prevailing wind direction prior to initiating excavation activities. The monitoring data will be collected using a data logger for submittal to MassDEP and USEPA and daily dust levels will be assessed to determine the effectiveness of the dust suppression measures and necessary additional mitigation measures. The PM-10 dust monitors will be set with an alarm in case of dust exceedances. One PM-10 Dust Action Level is established for all soil excavation and soil disturbance activities. The dust monitor will have the alarm set at or below the appropriate PM-10 Dust Action Level.

PM-10 Dust Action Level: 150 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$)

7. If significant airborne dust is identified, all construction activities shall be temporarily stopped until additional dust suppression (water) is applied to any open excavations or stockpiled material and PM-10 dust levels are below applicable PM-10 Dust Action Level.
8. Organic compounds shall also be monitored during excavation activities using handheld photoionization detectors (PID). Levels of total organic vapors (TOV) readings will be recorded during excavation. Little to no volatile contamination has been detected at the Site and elevated TOV readings are unlikely.